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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,787	08/27/2003	Marcel Mathijs Theodore Marie Dierichs	081468-0305619	4479

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EXAMINER

NELSON, VIVIAN HSU

ART UNIT	PAPER NUMBER
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2851

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EE

Office Action Summary

Application No.

10/648,787

Applicant(s)

DIERICH, MARCEL MATHIJS
THEODORE MARIE

Examiner

Vivian Nelson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date July 2005, Aug 2003
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito (JP #62 204 527).

1. For claim 1, Ito teaches a radiation system providing an unpatterned projection beam of radiation; a support structure for supporting a patterning device, which patterns the unpatterned beam according to a desired pattern; a substrate table for holding a substrate; a projection system configured to project the patterned projection beam onto a target portion of the substrate; a sensor for detecting luminescent radiation on a component traversed by the unpatterned or patterned projection beam; a control device (see below) to determine the intensity, in at least one region, of the unpatterned or patterned projection beam from the detected luminescent radiation – see abstract and Figs. 1-3. In this case, the term component as a lens is an inherent teaching of Ito because a lithographic apparatus would require the use of lenses within the projection optical system to magnify and shape the patterned beam onto a target portion of the substrate.
2. With respect to claim 2, Ito anticipates a sensor which detects the luminescent radiation from a plurality of regions on which the unpatterned or patterned projection beam is incident and the control device determines the intensity of the patterned or unpatterned beam in each of the regions in the abstract and Figs. 1, 3 and 5. Ito's figures show two sensors on either side of the

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light source, which together can detect radiation intensity in a plurality of regions. Since the results of the sensor are entered into a calculator for calculating an exposure time correction value, the calculator would be the “control device”. Further, in each of the figures, for example, Ito’s photosensor is shown in a number of different positions for measuring a plurality of regions.

3. Regarding claim 12, Ito discusses a control device configured to adjust at least one of the exposure time of the target portion of the substrate, the intensity of the unpatterned projection beam of the radiation produced by the radiation system, and the intensity distribution of the patterned projection beam in response to the detected luminescent radiation (abstract). As treated above, the control device is the calculator, and there is a shutter, which can regulate the exposure time according to the exposing time set value. The intensity of the unpatterned projection beam and the intensity distribution of the patterned beam can both be adjusted by the correction value of the calculator so that the emitting energy is constant – i.e. varying the resist film thickness.

4. With regards to claims 13 and 14, Ito’s abstract outlines a substrate that is at least partially covered by a layer of radiation-sensitive material; an unpatterned projection beam of radiation; projecting a patterned projection beam of radiation onto a target portion of the layer of radiation-sensitive material (see also Fig. 1); detecting luminescent radiation by at least one region of an area on a component traversed by the unpatterned or patterned projection beam (see claim 1 above); and determining the intensity, in at least one region, of the unpatterned or patterned projection beam from the detected luminescent radiation (see claim 2 above).

Additionally, detecting luminescent radiation comprises detecting luminescent radiation from a plurality of regions of the area on the component on which the unpatterned or patterned

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projection beam is incident and determining the intensity includes determining the intensity of the unpatterned or patterned projection beam (see claim 2 above).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Mulkens (EP #1 235 114).

5. For claim 1, Mulkens teaches a radiation system providing an unpatterned projection beam of radiation; a support structure for supporting a patterning device, which patterns the unpatterned beam according to a desired pattern; a substrate table for holding a substrate; a projection system configured to project the patterned projection beam onto a target portion of the substrate; a sensor for detecting luminescent radiation on a component traversed by the unpatterned or patterned projection beam; a control device to determine the intensity, in at least one region, of the unpatterned or patterned projection beam from the detected luminescent radiation – see abstract, col. 1 lines 1-13, col. 5 lines 25-27 and col. 8 lines 35-37. Also, as further discussed in col. 9 lines 5-19, the output of the detectors can be summed to create an amplitude signal, which can be measured to determine the intensity of the light source – it is an implied teaching that a control device sums the outputs and determines the intensity. In this case, the term component as a lens can be shown in Fig. 1.

6. For claims 2 and 3, Mulkens's sensor detects the luminescent radiation from a plurality of regions on which the unpatterned or patterned projection beam is incident and the control device (see claim 1 above) determines the intensity of the patterned or unpatterned projection beam in each of the regions – see col. 9 lines 22-39 and Figs. 3 and 4. Further, the component is a reflector and the sensor is not in an incident path or a reflected path of the unpatterned or patterned projection beam (col. 9 lines 39-41 and Fig. 1).

7. With respect to claims 4-6, the component being a multilayer stack forming a distributed Bragg reflector can be found in Mulkens col. 7 lines 40-46. It can be seen from Fig. 1 of Mulkens that the component is a reflector within one of the projection system and the radiation system, and is a first reflector on which the unpatterned projection beam is incident – see also col. 7 lines 17-23.

8. Regarding claims 7 and 8, Mulkens teaches a sensor that detects the total intensity of luminescent radiation in at least one region, or a plurality of regions (col. 5 lines 24-48). Since the luminescence radiates in different directions and Mulkens teaches either a plurality of detectors or a waveguide arrangement, the summed signal (see claim 1 above) can be of selectively chosen outputs – i.e. in at least one region or for a plurality of regions.

9. For claims 9 and 10, Mulkens's sensor detects the intensity of luminescent radiation in at least one region, or in a plurality of regions, at one or more wavelengths (see claims 7 and 8 above and col. 8 line 39 – col. 9 line 12).

10. With regards to claim 11, the patterning device, the projection system, the substrate and at least part of the radiation system of Mulkens are inherently contained in an evacuated chamber because of the use of light in the form of a UV laser (col. 7 line 25) – see also col. 4 lines 40-44).

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In this case, the sensor can detect luminescent radiation of at least one region of the area within the evacuated chamber (see claim 7 above) but is itself located outside of the evacuated chamber (col. 10 lines 17-20).

11. For claim 12, Mulkens teaches a control device configured to adjust at least one of the exposure time of the target portion of the substrate, the intensity of the unpatterned projection beam produced by the radiation system, and the intensity distribution of the patterned projection beam in response to the detected luminescent radiation (col. 10 lines 25-40).

The applied reference has a common assignee – i.e. ASML Netherlands B.V. – with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vivian Nelson whose telephone number is 571.272.8552. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Judy Nguyen can be reached on 571.272.2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

vhn


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